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Tuna Newsletter

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U.S. TUNA STATISTICS

Editor's note: The following articles were prepared by NMFS personnel from data and information gathered from sources in the U.S. tuna industry and government.

U.S. CANNED TUNA INDUSTRY HIGHLIGHTS, SECOND QUARTER 1993

Total receipts of tuna by U.S. canners during the second quarter of 1993 (April-June) increased by 2% to the equivalent of 116,300 short tons (st) of whole fish (round weight), compared to the second quarter of 1992 (Table 1). The principal species received was skipjack tuna with 57% of the total, followed by albacore and yellowfin tuna, with 22% and 21% of the total, respectively. Skipjack and albacore tuna receipts were up by 22% and 3%, respectively, while yellowfin tuna receipts were down by 30%.

Receipts for the first two quarters of 1993 totaled 210,600 st, a 6% decrease from the previous year (Table 2). Skipjack tuna receipts were unchanged, while yellowfin and albacore tuna receipts were down by 22% and 3%, respectively.

Although the vast majority of tuna received by U.S. canners is whole fish, some quantity is received as loins or gilled-and-gutted. The ratio of tuna loins to total receipts for the second quarter of 1993 was 5%, compared to 7% for the second quarter of 1992. Receipts of tuna loins for the first two quarters of 1993 totaled 9,000 st, down by 46% from the previous year. (The round weight totals used above were approximated by converting weights of

Table 1. Total U.S. cannery receipts (st) by species for the second quarters of 1992 and 1993. Totals may not add due to rounding.

Apr-Jun	Type	Albacore	Skipjack	Yellowfin[1]	TOTAL
1992	ROUND	24,700	48,300	24,700	97,700
	GILLED & GUTTED	0	0	1,200	1,200
	LOIN	0	2,600	4,300	6,900
	TOTAL (as received)	24,700	50,900	30,200	105,800
	TOTAL (estimated round wt)[2]	24,700	54,100	35,700	114,500
1993	ROUND	24,500	57,900	20,800	103,200
	GILLED & GUTTED	0	0	1,100	1,100
	LOIN	400	3,500	1,300	5,300
	TOTAL (as received)	24,900	61,500	23,200	109,600
	TOTAL (estimated round wt)[2]	25,500	65,900	24,900	116,300

[1]May include a small amount of bigeye tuna.

[2]Converted to round weight by using factors of 1.11 for gilled-and-gutted and 2.25 for loins.

Table 2. Total U.S. cannery receipts (st) by species for the first two quarters of 1992 and 1993. Totals may not add due to rounding.

Jan-Jun	Source	Albacore	Skipjack	Yellowfin[1]	TOTAL
1992	ROUND	45,900	97,800	42,100	185,800
	GILLED & GUTTED	0	0	1,700	1,700
	LOIN	0	10,900	5,700	16,600
	TOTAL (as received)	45,900	108,700	49,500	204,100
	TOTAL (estimated round wt)[2]	45,900	122,400	56,800	225,100
1993	ROUND	43,300	107,800	37,600	188,800
	GILLED & GUTTED	*	*	1,400	1,400
	LOIN	400	6,300	2,300	9,000
	TOTAL (as received)	43,800	114,200	41,300	199,200
	TOTAL (estimated round wt)[2]	44,300	122,100	44,200	210,600

*Less than 100 st reported for this category.

[1]May include a small amount of bigeye tuna.

[2]Converted to round weight by using factors of 1.11 for gilled-and-gutted and 2.25 for loins.

Table 3. U.S. cannery receipts (st) of domestic and imported tuna by species for the second quarters of 1992, 1993 and the recent (1988-92) second quarter averages. Totals may not add due to rounding.

Apr-Jun	Source	Albacore	Skipjack	Yellowfin[1]	TOTAL
	AMERICAN SAMOA & CALIFORNIA				
1992	DOMESTIC	500	20,800	12,800	34,200
	IMPORTED	5,300	6,600	8,400	20,300
	TOTAL	5,800	27,400	21,200	54,500
1993	DOMESTIC	500	27,800	11,200	39,600
	IMPORTED	7,000	8,200	2,700	17,900
	TOTAL	7,500	36,100	13,900	57,500
1988-92 Average	DOMESTIC	1,200	22,800	13,800	37,900
	IMPORTED	5,500	11,500	5,000	22,100
	TOTAL	6,800	34,400	18,800	59,900
	PUERTO RICO				
1992	DOMESTIC	*	5,600	4,000	9,600
	IMPORTED	18,900	17,900	4,900	41,700
	TOTAL	18,900	23,500	9,000	51,300
1993	DOMESTIC	0	8,300	1,400	9,600
	IMPORTED	17,400	17,100	7,900	42,400
	TOTAL	17,400	25,400	9,300	52,100
1988-92 Average	DOMESTIC	200	6,500	10,900	17,700
	IMPORTED	18,900	17,900	11,600	48,400
	TOTAL	19,100	24,400	22,500	66,100
	TOTAL				
1992	DOMESTIC	600	26,400	16,900	43,800
	IMPORTED	24,200	24,500	13,300	62,000
	TOTAL	24,700	50,900	30,200	105,800
1993	DOMESTIC	500	36,100	12,600	49,200
	IMPORTED	24,400	25,300	10,600	60,400
	TOTAL	24,900	61,500	23,200	109,600
1988-92 Average	DOMESTIC	1,500	29,400	24,700	55,600
	IMPORTED	24,400	29,400	16,600	70,500
	TOTAL	25,900	58,800	41,300	126,000

*Less than 100 st reported for this category.

[1]May include a small amount of bigeye tuna.

loins and gilled-and-gutted receipts by factors of 2.25 and 1.11, respectively. For the remainder of this article, unconverted receipts are used unless otherwise stated.)

Receipts of tuna in American Samoa and California for the second quarter of 1993 were up by 6%, compared to the second quarter of 1992, with increases in skipjack and albacore tuna receipts more than offsetting a decrease in yellowfin tuna receipts (Table 3). Total receipts in Puerto Rico were up by 2%.

Domestic deliveries to canneries were up by 16% in American Samoa and California due to substantial increase in skipjack tuna receipts, while the amount of domestic deliveries to Puerto Rico was unchanged. Skipjack tuna was the largest component of all domestic deliveries for the first two quarters of 1993 at 77,600 st, while albacore was the largest import component at 41,900 st (Table 4). Domestic deliveries accounted for 51% of the tuna delivered to U.S. canners during the first six months of 1993.

Skipjack tuna was the leading import for the second quarter of 1993 at 25,300 st, followed closely by albacore at 24,400 st (Table 5). The leading supplier was Taiwan, with 31% of the import market, followed by France and Japan, with 16% and 11% of the market, respectively. The western Pacific Ocean was the main source of all three important tuna species (Table 6): skipjack tuna (41,600 st), yellowfin tuna (14,200 st) and albacore (9,700 st).

Contract prices for domestically caught tuna delivered to U.S. canners in the second quarter of 1993 were within the 1992 second quarter price ranges for all categories of fish (Table 7). Maximum prices (not adjusted for inflation) have increased in each of the past three quarters, reversing a downward trend that started in 1988. Between the first quarter of 1988 and the third quarter of 1992, prices fell approximately 40%.

Table 4. U.S. cannery receipts (st) of domestic and imported tuna by species for the first two quarters of 1992, 1993 and the recent (1988-92) averages. Totals may not add due to rounding.

Jan-Jun	Source	Albacore	Skipjack	Yellowfin[1]	TOTAL
1992	DOMESTIC	2,900	58,900	29,000	90,800
	IMPORTED	43,000	49,900	20,500	113,400
	TOTAL	45,900	108,700	49,500	204,100
1993	DOMESTIC	1,800	77,600	21,300	100,700
	IMPORTED	41,900	36,600	20,000	98,500
	TOTAL	43,800	114,200	41,300	199,200
1988-92 Average	DOMESTIC	3,800	54,700	43,100	101,500
	IMPORTED	45,500	54,900	30,700	131,100
	TOTAL	49,300	109,500	73,800	232,600

[1]May include a small amount of bigeye tuna.

Table 5. U.S. cannery imports (st) of tuna by species and source (flag of catcher vessel) for the second quarter of 1993. Totals for the second quarter of 1992 are given for comparison. Note that the flag of the catcher vessel does not necessarily reflect the country of export or point of shipment. Totals may not add due to rounding.

VESSEL FLAG	1993				1992
	Albacore	Skipjack	Yellowfin[1]	TOTAL	TOTAL
AUSTRALIA	0	800	0	800	300
CYPRESS	0	1,100	0	1,100	0
F.S. MICRONESIA	0	2,100	800	2,900	1,600
FRANCE	200	4,400	5,000	9,600	2,300
GHANA	0	2,000	900	2,900	5,300
JAPAN	6,400	0	0	6,400	8,400
NEW ZEALAND	700	0	0	700	300
PANAMA	0	3,200	500	3,700	2,000
SIERRA LEONE	0	700	500	1,300	0
SOUTH AFRICA	3,100	0	0	3,100	3,400
SOUTH KOREA	*	900	400	1,300	3,300
SPAIN	300	4,500	500	5,300	4,300
TAIWAN	13,400	3,900	1,200	18,500	18,900
VANUATU	0	300	400	700	4,800
UNKNOWN	*	900	200	1,200	100
OTHER	400	400	100	900	7,100
TOTAL	24,400	25,300	10,600	60,400	62,000

*Less than 100 st reported for this category.

[1]May include a small amount of bigeye tuna.

U.S. imports of canned tuna packed in water totaled 14,800 st for the second quarter of 1993, down 69% from 1992. The decline in canned tuna imports is partially due to a Food and Drug Administration detention of some shipments from Southeast Asia suspected to be of unfit quality. For the first six months of 1993 imports of canned tuna stood at 53,800 st, down 46% from the previous year.

U.S. TUNA FISHERIES UPDATE

EASTERN PACIFIC PURSE SEINE FISHERY

During the period January through September 1993, 10 U.S. purse seiners caught an estimated 13,200 metric tons (mt) of yellowfin tuna and 13,100 mt of skipjack tuna in the eastern Pacific, according to the Inter-American Tropical Tuna Commission (Figure 1). The yellowfin tuna catch was down 15% from the 1992 catch (15,600 mt), while the skipjack tuna catch was up 7% from the 1992 catch (12,300 mt). The fleet continues to be affected by "dolphin safe" policies and is concentrating its effort on skipjack and yellowfin tuna not associated with dolphins. However, based on fishing trips completed between October 1, 1992, and September 30, 1993, three U.S. vessels did make a total of 303 sets on tuna associated with dolphins resulting in an incidental mortality of 176 animals.

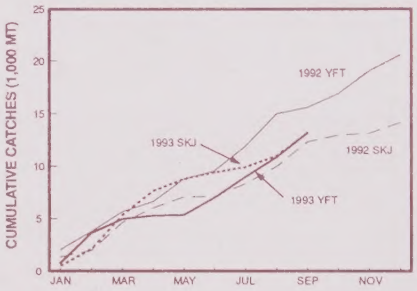

Figure 1. Cumulative tuna catches, by month, for the U.S. eastern Pacific purse seine fishery, 1992 and 1993.

WESTERN PACIFIC PURSE SEINE FISHERY

According to reports received by the SWFSC, 36 U.S. purse seiners, fishing in the western tropical Pacific under the South Pacific Tuna Treaty, landed an estimated 56,900 mt of skipjack tuna and 16,000 mt of yellowfin and bigeye tuna during the period January through June 1993 (Figure 2). The skipjack tuna landings were down 22% from the 1992

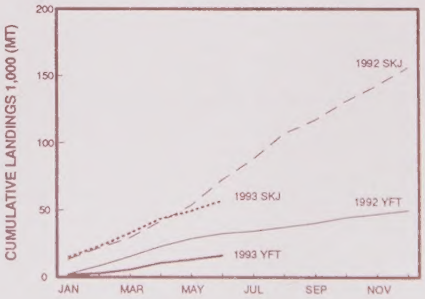

Figure 2. Cumulative tuna landings, by month, for the U.S. western tropical Pacific purse seine fishery, 1992 and 1993.

Table 6. Receipts (st) of tuna by U.S. canneries by species and area of capture for the second quarters of 1992 and 1993. Totals may not add due to rounding.

SOURCE	Albacore		Skipjack		Yellowfin[1]	
	1992	1993	1992	1993	1992	1993
E. ATLANTIC OCEAN						
DOMESTIC	0	0	0	0	0	0
IMPORTED	9,100	7,500	16,400	12,300	4,200	4,600
TOTAL	9,100	7,500	16,400	12,300	4,200	4,600
W. ATLANTIC OCEAN						
DOMESTIC	*	0	0	0	0	0
IMPORTED	4,700	*	0	0	100	100
TOTAL	4,700	*	0	0	100	100
E. PACIFIC OCEAN						
DOMESTIC	100	0	2,500	*	1,800	1,100
IMPORTED	400	0	1,500	*	700	0
TOTAL	500	0	4,000	*	2,400	1,100
W. PACIFIC OCEAN						
DOMESTIC	400	500	23,900	32,500	15,100	11,500
IMPORTED	8,400	9,100	5,800	9,100	7,900	2,700
TOTAL	8,800	9,700	29,700	41,600	23,000	14,200
INDIAN OCEAN						
DOMESTIC	0	0	0	0	0	0
IMPORTED	1,500	2,900	800	2,900	400	3,200
TOTAL	1,500	2,900	800	2,900	400	3,200

*Less than 100 st reported for this category.

[1]May include a small amount of bigeye tuna.

Table 7. Contract price ranges (U.S. $ per st) for skipjack and yellowfin tuna for delivery to U.S. canneries in American Samoa and Puerto Rico by U.S. vessels arriving from trips in the second quarters of 1992 and 1993.

SIZE CLASS (lbs.)	SKIPJACK		YELLOWFIN	
	1992	1993	1992	1993
<3	165-385	255-327	165-385	255-327
3 to 4	365-585	455-527	365-585	455-527
4 to 7.5	560-780	650-722	560-780	650-722
7.5 to 20	610-835	700-772	620-840	710-782
>20	---	---	750-905	820-902

landings for the same period (72,400 mt) and the yellowfin/bigeye tuna landings were down 51% (from 32,400 mt). The 1993 totals are preliminary and may understate the actual landings due to delays in recording transshipped catches. *(Report provided by John Childers, NMFS Southwest Fisheries Science Center, La Jolla, CA)*

NORTHERN PACIFIC ALBACORE FISHERY

The 1993 U.S. troll season for albacore in the north Pacific began in late May with vessels departing from the Hawaiian Islands to fish due north of Midway Island. Three major areas of albacore fishing activity developed during the season: (1) an "outside" fleet consisting of larger vessels fishing about 145°-170°W; (2) an "inside" fleet consisting of mixed-size vessels fishing along the entire Oregon coast about 125°-127°W; and (3) a "northern" fleet of mixed size U.S. and Canadian vessels fishing west of Vancouver Island about 129°-133°W. The "outside" fleet experienced the most successful fishing, with catch rates from 50-350 fish per day, while the "inside" and "northern" fleets had catch rates up to 200 fish per day. Overall, fishing success has been spotty. The average size of albacore caught has been around 15 pounds, with larger fish caught in the northern areas. Landings as of mid-September totaled 2,200 st. The season is rapidly coming to a close, and the total landing for the season is anticipated to be over 3,000 st. *(Report provided by Gary Rensink, NMFS Southwest Fisheries Science Center, La Jolla, CA)*

SOUTHERN PACIFIC ALBACORE FISHERY

The 1992-93 south Pacific albacore fishery was a bust for U.S. vessels. Preliminary landing estimate for the season is 1,020 mt, compared to 3,020 mt landed during 1991-92. This has affected plans for the 1993-94 season. Fewer than 30 U.S. troll vessels are expected to participate in the southern Pacific fishery during the 1993-94 fishing season, compared to the 40-plus vessels that participated in the 1992-93 season. *(Report provided by John Childers, NMFS Southwest Fisheries Science Center, La Jolla, CA)*

ATLANTIC BLUEFIN TUNA FISHERY

As of October 1, the U.S. commercial landings of Atlantic bluefin tuna for 1993 under the general category (gear type: handline, rod and reel, and harpoon) totaled 600.86 mt of a 603 mt quota with the average weight per fish of 395.5 pounds. The harpoon category has harvested 56.58 mt of bluefin tuna out of a 60

mt quota with an average weight of 405 pounds per fish. The incidental longline category reports landings of 78.93 mt out of a quota of 82 mt. The purse seine category reports landings of 271.90 mt from a quota of 302 mt with an average weight of 379.9 pounds.

The General category was closed on September 24, 1993, with the exception of the New York Bight area. The Harpoon category was closed on September 18, 1993. (Report provided by Kevin B. Foster, NMFS Northwest Region, Gloucester, MA)

REPORTS

Editor's note: Original reports are published as a service to subscribers and may not represent the views of the NMFS. Readers should contact the authors of reports for details, if needed.

THE FRENCH ALBACORE TUNA DRIFT GILLNET FISHERY

Michel Goujon and Lote Antoine, Centre IFREMER de Brest, B.P. 70, 29280 Plouzane, France.

Evolution of the Albacore Fishery

Fishing for albacore in the Bay of Biscay has been a traditional activity for French and Spanish fishermen for more than two hundred years. The fishery began with the development of a canning industry in the middle of the nineteenth century. In the 1910s the French fleet grew to 700 sailing trollers, each with a crew of six or seven men. The national catch averaged 6,000 mt and was processed in about 100 canneries. During the 1930s motorized vessels with refrigerated holds began to replace the sailing boats, greatly increasing the yields. In 1939, 950 boats landed 20,000 mt. By the time the pole-and-line baitboats appeared in 1949, the entire fleet was motorized. Ten years later, the pole-and-line boats landed as much albacore as did the trollers. But in the 1970s, the French discontinued using the highly specialized pole-and-line boats which were not very suitable for use in other fisheries outside of the albacore season. In the 1980s the use of trollers was discontinued because of the low economic returns compared to other fisheries.

Despite previous unsuccessful trials in 1926 and 1947 to catch albacore tuna with drift gillnets, IFREMER researchers and fishermen again experimented with drift nets in 1986. This time, because of the new gear used (nylon nets and hydraulic power block), they were successful. In 1992, some 50 vessels used drift gillnets to catch 4,000 mt of albacore during the summer fishing season. These boats spent the rest of the year fishing for demersal species with gillnets or trawls. Most recently another fishing technique, pelagic pair trawling, was successfully developed by IFREMER. The evolution of the different fishing methods is reflected by the albacore landings shown in Figure 3.

The Drift Gillnet Fishery

Drift gillnet vessels range from 18 to 25 meters (m) in length and are crewed by seven or eight men. Their carrying capacities range from 15 to 25 mt. The net is composed of 100 to 150 tans, each measuring 50 m in length and 20 m in depth. The stretched mesh size is 18.0 centimeters (cm). The net is set so that the corkline is either on the surface or submerged to a depth of 2 m.

Fishing takes place from May to September and starts from north of the Azores and moves northward to southwest of Ireland (Figure 4).

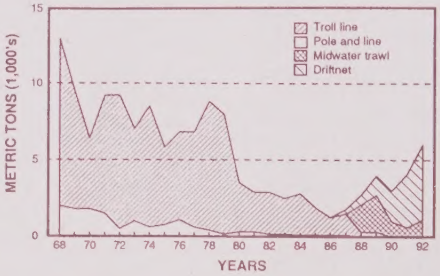

Figure 3. The French national production of albacore from 1968 to 1992.

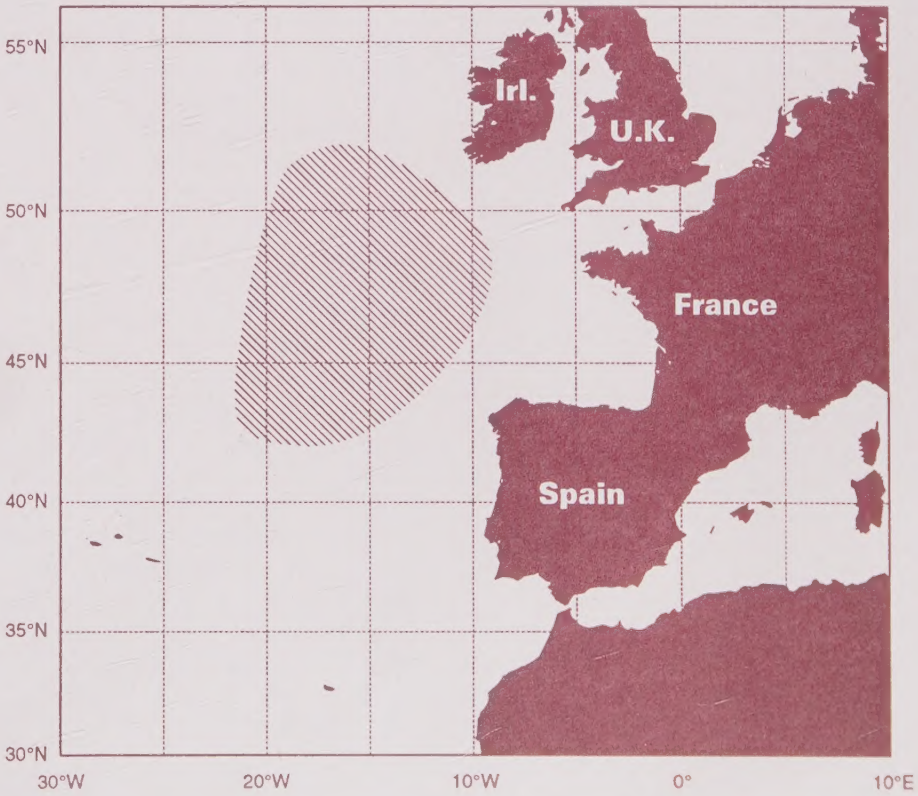

Figure 4. The fishing area for the French albacore drift gillnet fishery in 1992.

Fishing trips are 15 to 25 days in duration, depending on the distance between the ports and the fishing grounds. On average, a vessel makes five or six trips during the season. The net is set from the stern at dusk and hauled early in the morning by means of a power block usually located on the starboard side. Depending on the number of fish caught, the hauling lasts six to twelve hours. This fishing operation is repeated every night until the holds are filled. On average ten sets are made per trip. The catch is gutted and bled before it is iced. The average albacore catch per fishing trip is 400 fish, most of which are juveniles. The fish range from 50 to 85 cm in length with 77.5% in the 58 to 68 cm range (Figure 5).

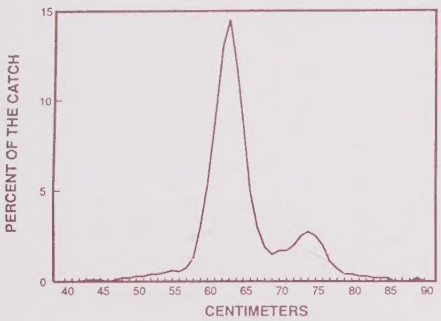

Figure 5. The length frequency distribution of the albacore caught by the French drift gillnetters in 1992.

Incidental Catch of Cetaceans

The albacore drift gillnet fishery also catches other species, and this has been the subject of a scientific study based on information collected by on-board observers in 1992 and 1993. The by-catch study is being conducted in response to a request from the European Community Council. The distribution of the 1992 by-catch is shown in Table 8.

During the 1992 fishing season, Striped dolphins (*Stenella coeruleoalba*) and common dolphins (*Delphinus delphis*) represented 69% and 24%, respectively, of the incidental catch of cetaceans. Other species taken include the bottlenose dolphin (*Tursiops truncatus*) and the pilot whale (*Globicephala sp.*). IFREMER scientists conducted a sighting survey during the summer of 1993 in order to gather abundance information necessary to assess the impact of the incidental catches on the cetacean populations.

Table 8. The by-catch of the 1992 French drift gillnet albacore fishery.

Species	Percentage of catch (in numbers)
Tunas	
Albacore	85.87
Other tunas	0.02
By-catch with economical value (always landed)	
Wreckfish (*Polyprion americanus*)	0.55
Swordfish (*Xyphius gladius*)	0.09
Shortfin mako (*Isurus oxyrinchus*)	0.02
By-catch with little of no economic value	
Blue shark (*Prionace glauca*)	6.72
Atlantic pomfret (*Brama rai*)	6.28
Other fishes and cephalopods	0.25
Incidental catch	
Cetaceans	0.17
Turtles (released alive) and birds	0.01
Total	100.00

The results of the cetacean incidental catch study are intended for use by the European Community Council to decide whether or not the albacore drift gillnet fishery (comprised mainly of French but also of a few Irish boats) should be allowed to continue. In the meantime, however, following a United Nations resolution, the European Community Council has banned, since February 1992, the use of drift nets longer than 2.5 kilometers. An exemption was granted to vessels that had driftnetted for albacore in the northeast Atlantic Ocean the previous two seasons. The exemption allows these vessels to continue using drift nets up to 5 kilometers in length until December 31, 1993, "unless the Council decides [...] to extend it in the light of scientific evidence showing the absence of any ecological risk linked thereto."

It seems increasingly likely that the fate of the French albacore drift gillnet fishery will be decided by the current international movement to ban the use of drift gillnets and, in Europe, by the position of Spain, with its 200 albacore trollers and 300 pole-and-line boats, calling for a complete cessation of the activity of the French driftnetters.

U.S. YELLOWFIN TUNA EMBARGO UPDATE

Steve Thompson, Southwest Region, National Marine Fisheries Service, NOAA, 501 West Ocean Boulevard, Suite 4200, Long Beach, CA 90802-4213

The importation of yellowfin tuna and its products into the United States is regulated by the 1988 amendments to the Marine Mammal Protection Act (MMPA). These regulations pertain to harvesting nations with purse-seine vessels in the eastern tropical Pacific (ETP) capable of catching dolphin-associated tuna, and also to intermediary nations that may or may not fish in the ETP but import yellowfin tuna and subsequently offer tuna or tuna products for export to the United States. These regulations are intended to further reduce the incidental mortality of dolphins in the ETP tuna purse-seine fishery.

Harvesting Nations

The MMPA requires that any nation that has a tuna purse seiner of greater than 400 st carrying capacity in the ETP and intends to have the yellowfin tuna it harvests imported into the United States must produce documentary evidence that: (1) The nation has adopted a regulatory program comparable to the U.S. program governing the incidental taking of marine mammals in the fishery, and (2) the average incidental dolphin mortality rate in their fishery is comparable to that of the U.S. fishery.

The following nations are known to purse-seine for yellowfin tuna in the ETP and are currently subject to a harvesting nation yellowfin tuna embargo because they do not fully comply with the importation requirements of the MMPA: Colombia, Mexico, Panama and Venezuela. However, yellowfin tuna (or its products) harvested by a method other than purse-seine or in an area other than the ETP may be imported from these nations.

Intermediary Nations

Any nation that intends to export yellowfin tuna or its products to the United States must ban the importation of these items from any nation that is prohibited from exporting them directly to the United States. The intent of this rule is to prevent the "laundering" of tuna that are prohibited from entering the United States. It is important to note that the importation of yellowfin tuna that has been harvested by, imported to or exported from an identified intermediary nation is prohibited, even if it is shipped to the United States from a nation that is not listed as an intermediary nation.

The following are listed as intermediary nations: Costa Rica, Italy, Japan and Spain. To be removed from this list, a nation must certify that it has not imported, within the preceding six months, any yellowfin tuna or product that is prohibited from direct importation into the United States.

The Fisheries Certificate of Origin (NOAA Form 370) is required for all shipments of all species of tuna and tuna products, except fresh, from all nations. This document is used to identify the harvesting nation and the area and method of harvest. Copies of NOAA Form 370 are available by telephoning the NMFS, Southwest Region, at 310-980-4019, or by fax at 310-980-4047.

Recent Developments

There has been some speculation that Spain has been removed from the intermediary nation embargo list. This is not so, as of October 1993. The MMPA requires that a harvesting nation must obtain a finding from the NMFS to export yellowfin tuna to the United States. A condition for the initial finding is that the nation must have a dolphin protection program comparable to the U.S. program, including 100 percent observer coverage of its fleet. For a continuation of the finding, the nation must provide an annual summary of its fleet's activities that indicates, based on the observer logbooks, that its fleet's incidental mortality of dolphins in the ETP tuna fishery is comparable to that of the U.S fleet.

An initial finding has been made for Spain, based on documentation provided by the Government of Spain describing its dolphin protection program which prohibits its vessels from intentionally deploying purse-seine nets to encircle dolphins. Such a finding normally would allow importation of that nation's yellowfin tuna; however, Spain is still listed as an intermediary nation. Until it can provide certification that it has not imported yellowfin tuna prohibited from direct export to the United States, importation of all yellowfin tuna from Spain is prohibited. The Government of Spain is aware of this situation and is making efforts to have the intermediary nation embargo lifted in the near future.

An abstract from a recently published paper written by a SWFSC scientist is presented in this space to announce its availability and to report results of tuna research conducted by Center staff.

RECENT SWFSC PUBLICATION: "RELATIVE ABUNDANCE OF PELAGIC RESOURCES UTILIZED BY THE CALIFORNIA PURSE-SEINE FISHERY: RESULTS OF AN AIRBORNE MONITORING PROGRAM, 1962-90"

James L. Squire, Jr., Southwest Fisheries Science Center, National Marine Fisheries Service, NOAA, P.O. Box 271, La Jolla, CA 92038. *Published in Fishery Bulletin, U.S. 91(2):348-361*

During the period 1962-90, an aerial monitoring program conducted in cooperation with aerial spotters searching for pelagic fishes off California and Baja California, Mexico, resulted in the development of an index of apparent abundance for six species of fishes: the northern anchovy *Engraulis mordax*, Pacific sardine *Sardinops sagax*, Pacific bonito *Sarda chiliensis*, chub mackerel *Scomber japonicus*, jack mackerel *Trachurus symmetricus*, and bluefin tuna *Thunnus thynnus*. Northern anchovy was the dominant species observed, accounting for 89.7% of tonnage recorded during 1962-90. Chub mackerel comprised 6.1% of the total tonnage, jack mackerel 2.1%, Pacific sardine 1.0%, Pacific bonito 0.6%, and bluefin tuna 0.5%.

Apparent abundance indices were computed by dividing the tonnage observed by the number of "block areas" (10' lat. X 10" long.) searched, expressed as tons/block

area flown (T/BAF). Indices were calculated for the total area and for the core area of distribution and abundance for each species. All species exhibited large fluctuations in apparent abundance over time. The apparent abundance index for Pacific sardine declined to a very low level during 1966-83. A substantial increase in abundance occurred during the mid- to late-1980s, with the 1990 index value 58 times that observed during the early 1960s. The chub mackerel abundance index declined to a very low level during 1966-76, then increased to a record high value in 1978 and has since declined. The northern anchovy abundance index increased in the early 1970s, with high abundance levels recorded during 1972-81, and then declined sharply to very low levels in the 1980s. The Pacific bonito abundance index was high during 1965-67 and 1983-85, with current levels well below the long-term mean. Very high abundance index levels for jack mackerel were recorded during 1975-79, then declining to very low levels in the 1980s. The bluefin tuna abundance index increased during 1972-80, declining to very low index values since. Based on these data, several species appear to be fluctuating unpredictably with respect to species abundance over time.

Aerial indices were compared with available total, spawning, and larval biomass estimates developed for several species. The most significant correlation of the aerial index was between the northern anchovy and Pacific sardine indices.

RECENT DEVELOPMENTS IN TUNA FISHERIES

Editor's note: The following news items, compiled from fishery trade and industry journals, newspapers and NMFS reports, are provided only as a service to our readers. The NMFS does not guarantee their accuracy.

UNITED STATES

FDA Checks for Heavy Metals--Officers of the U.S. Food and Drug Administration are to begin analyzing samples of domestic and imported fresh and canned seafood for heavy metals such as lead, cadmium and mercury. While there is a current regulatory limit of 1.0 part per million for the presence of methyl mercury in seafood, no tolerance levels have yet been established for lead or cadmium. Consequently, the FDA will collect and evaluate data on these two elements. The species to be investigated include fresh and canned tuna. Meanwhile 200 domestic and 200 imported samples of shark, swordfish and tuna will be analyzed for methyl mercury--fish containing more than the legal limits will be detained. Import sampling will be conducted in Boston, Seattle, Los Angeles and New York. (INFOFISH *Trade News*, August 2, 1993)

EASTERN PACIFIC

Mexican Tuna Catches Decline-- Mexican fishermen caught 64,550 mt of tuna in the eastern tropical Pacific (ETP) during the first six months of 1993, a 10 percent decrease from 1992 catches. Most of the decline was due to lower yellowfin catches (52,270 mt), the primary species taken off Mexico. Fishermen normally catch only small quantities of skipjack, but reported taking nearly 12,300 mt in the first six months of 1993--more than 30 percent above 1992 catches during the same period. These fluctuations are primarily due to three factors: (1) Skipjack availability: One observer reports that unusually large quantities of skipjack were available in the ETP during early 1993. (2) Fishing methods: Mexican fishermen made fewer sets on tuna associated with dolphins and more on "free" schools and tuna associated with floating objects. Such sets tend to yield higher quantities of skipjack and small yellowfin than sets on dolphin. (3) Marketing problems: Mexican fishermen appear to be reducing fishing effort because of marketing problems. Several seiners are reportedly idle in Mazatlan and Ensenada. Mexican companies have significantly expanded the domestic market in recent years and now sell over 100,000 mt of tuna domestically. The domestic market, however, is currently saturated and cannot absorb the product formerly exported to Europe. (NMFS *Weekly Highlights*, August 9-13, 1993)

Venezuelan Tuna Industry-- Venezuela is one of two Latin American countries (the other being Mexico) that developed modern tuna purse seine fisheries during the 1980s. Venezuelan companies acquired a fleet of over 30 modern purse seiners and a larger number of smaller vessels. Many of the Venezuelan seiners were purchased used at relatively attractive prices. Venezuela is not a Pacific coast country, therefore, their vessels operating in the Pacific have to either fish at some distance from the coast or within the 200-mile exclusive economic zones of coastal eastern Pacific countries. Venezuela has an access agreement with only one ETP country. While most of the Venezuelan tuna catch is taken in the Pacific, important quantities are also taken in the Caribbean. As a result, Venezuela has become the second leading Latin American tuna fishing country.

Venezuelan fishermen in 1991 caught over 80,000 mt of tuna, primarily yellowfin. Tuna is the country's largest single fisheries activity and Venezuela has developed an important domestic tuna market. Much of the catch, however, during the 1980s was exported, and tuna became a leading fishery export product. Venezuelan companies during the 1990s have encountered significant problems in the principal international tuna markets. Venezuelan exports never seriously en-

tered the large Japanese market and sales to the United States and European Community have declined in the early 1990s because of various market factors and the increasing concern over the incidental dolphin mortalities in the ETP. As a result, Venezuelan companies may increasingly rely on the domestic market and intra-regional trade with other Latin American countries. Venezuelan fishermen are cooperating in international efforts to protect dolphins and are making progress in reducing dolphin mortalities. (NMFS *Fisheries Market News Report*, September 22, 1993)

WESTERN PACIFIC

Marshall Islands-China Agreement-- The Marshall Islands and China have signed a memorandum of understanding which could result in China deploying 50 longliners in the Marshall Islands. The proposed deal would nearly quadruple the number of Chinese vessels in the Marshall Islands and should greatly boost that country's fishing industry. The deal would also benefit the national carrier, Air Marshall Islands, which flies tuna to Honolulu. (INFOFISH *Trade News*, September 3, 1993)

New Zealand to Grow Bluefin Tuna-- New Zealand's Fisheries Minister has been so impressed with a southern bluefin wild tuna growing project at Port Lincoln, South Australia, that he is supporting the launch of a similar operation in the Marlborough Sounds. The tuna growing venture will be carried out at a mussel farm at Admiralty Bay. Southern bluefin tuna earns very high prices in the sashimi market, mainly in Japan, but catches which once were around 14,000 mt and more have dwindled and are now strictly controlled by quota. In 1991 they totaled only 4,500 mt. Twenty-six tons of tuna were grown out in cages at Port Lincoln in 1991. This increased to 120 tons worth $2.7 million in 1992, and this year the amount should total 900 tons worth $21.6 million. It is hoped to produce 2,000 mt by 1996. (*Fishing News International*, September 1993)

EASTERN ATLANTIC

Mauritania-EC Agreement-- Spain appears to be the major beneficiary of a recent fishing agreement signed between the EC and Mauritania. Under the agreement, 86% of the vessel tonnage and 44% of the licenses granted to the EC for fishing migratory species within the Mauritanian economic zone would in effect be utilized by Spanish vessels. Of the 11 licenses granted for pole-and-line and longline tuna vessels, the Spanish are utilizing 4, and of the 34 tuna seiner licenses they are using 16. (INFOFISH *Trade News*, September 3, 1993)

INDIAN OCEAN

Iran Plans Billion Dollar Tuna Investment--Iran's Industrial Fishing Co. (IFCO) is planning to purchase 43 fishing vessels to develop tuna fishing and fishmeal industries. The Teheran-based company is already negotiating with various groups to construct vessels for fishing in international waters. Developing these fisheries calls for a total investment of $1.2 billion over eight years in construction and running costs. About half of the cost would be invested in vessels. Under the plan Iran will operate 18 tuna purse seiners of 63 meters overall length costing a total of $396 million, ten low temperature sashimi longliners of 45 meters costing $116 million and 15 seiner-trawlers of 750 mt capacity. The tuna purse seiners would be launched from 1997 onwards while the ten sashimi longliners would be in operation a year earlier. The total annual tuna haul is expected to be 95,000 mt. The ships will operate in Iranian territorial waters and the Indian Ocean. (INFOFISH *Trade News*, September 16, 1993)

Tuna Tagging in the Maldives-- The Maldives has a large traditional pole-and-line tuna fishery which catches mainly skipjack tuna. A very successful tuna tagging program was carried out in the Maldives in 1990. Nearly 10,000 skipjack and yellowfin tuna were tagged, of which 15.7% were recaptured. Considerable information was obtained, particularly on the population dynamics of skipjack within the Maldives. Information was also obtained on tuna

UPCOMING TUNA MEETINGS

(Organizer; meeting type: sci=science, adm=administration)

1993:

- NOV 1-5. SCRS Plenary Meeting, International Commission for the Conservation of Atlantic Tunas. Madrid, Spain. (ICCAT; sci)
- NOV 8-12. Annual Meeting of the ICCAT. Madrid, Spain. (ICCAT; adm)
- DEC 8-14. Thirteenth North Pacific Albacore Workshop. La Jolla, California. (SWFSC; sci)

1994:

- FEB 16. Japan Tuna Conference. Shimizu, Japan. (National Institute of Far Seas Fisheries; adm)
- MAY 23-26. 45th Tuna Conference, Lake Arrowhead, California. (SWFSC; sci)
- JUN 7-9. Annual Meeting of the Inter-American Tropical Tuna Commission. Caracas, Venezuela. (IATTC; adm)
- DEC 11-14. International Symposium on Pacific Swordfish. Ensenada, Mexico. (Ensenada Center of Scientific Investigations and Higher Education (CICESE) and SWFSC; sci)

movements, with a total of 71 tag returns from outside of the Maldives. A second tagging program was started in the Maldives in September 1993. Under that program, more than 7,000 tunas are expected to be tagged over the next 18 months.

The main goal of the current tagging program is to refine information on skipjack tuna population dynamics within the Maldives. A secondary goal is to validate otolith ageing studies by tetracycline injecting some tagged tunas. Most fish will be tagged with yellow dart tags. Tetracycline injected fish will be tagged with orange dart tags. All fisheries workers are requested to return all tags to their nearest fisheries office or directly to the Maldives (Marine Research Section, Ministry of Fisheries and Agriculture, Male, Republic of Maldives.) T-shirt rewards are being sent for all tag returns. Particular attention should be paid to securing full details and otoliths from any orange-tagged tunas. (Ministry of Fisheries and Agriculture, Republic of Maldives)

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